Holistic Assessment Tool-kit on Energy Efficient Retrofit Measures for Government Buildings (EnERGo) – Annex 46

Energy Conservation in Buildings and Community Systems Programme (ECBCS)

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Annex 46 Scope

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Government non-residential buildings, e.g.:

- **office/administrative buildings,**
- **dormitories/barracks**
- **large one-storey production and**
- **maintenance facilities**

Annex 46 Target Groups

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- Building energy managers
- Building, Process and Energy Systems Designers
- Energy Services Companies
- Energy auditors
- Executive decision-makers

Annex 46 Objectives

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- ***To provide tools and guidelines to improve the working environment of Government buildings through energy-efficient retrofitting projects. Many results can be applied to similar private sector buildings;***
- ***To provide recommendations on how to operate the retrofitted buildings;***
- ***To promote energy- and cost-efficient retrofit measures by providing successful examples;***
- ***To support decisionmakers in evaluating the efficiency and acceptance of available concepts;***
- ***To find improved ways of using Energy Performance Contracts (ESPCs) for Government buildings retrofit measures.***

Annex 46 Structure

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Subtask A: Develop an energy assessment and analysis methodology/protocol and the "Energy Assessment Guide for Energy Managers and ESCOs"

Integrating Subtask D

Subtask B: Develop a database of "Energy Saving Technologies and Measures for Government Building Retrofits" with examples of best practices

Subtask C: Develop "Best-practice guidelines for innovative energy performance contracts"

T T O O L - K I T

Tasks related to ECBCS Program

ESBCS subtask performed with participation of the DSM Program Task X members

Subtask A: Develop an energy assessment and analysis methodology/protocol "Energy Assessment Guide for Energy Managers and ESCOs":

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- **Analysis of best practices and procedures of identifying energy conservation opportunities in retrofitted Government buildings**
- **Development of a consensus protocol for conducting energy assessments at Government administrative/office buildings and production and maintenance facilities.**

<u>Subtask B</u>: Develop a database of "Energy Saving Technologies and Measures for Government Building Retrofits" with examples of best practices:

- **Analysis of series of best practice examples of retrofitted buildings**
- **Technical and LCC analysis of energy saving technologies and measures for different climatic conditions and energy costs;**
- **Development of a list of promising energy saving technologies and measures, identify screening tools and conduct screening for representative conditions**
- **Development of a data-base supported by examples of good-practices/show case descriptions**

Subtask C: Develop "Best-Practice Guidelines for Innovative Energy Performance Contracts"

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- Analysis and summary of ESPC best practice agreements and financial options
- LCCA and benchmarking for retrofit assessment and ESPCs,
- Risk assessment and risk sharing in ESPCs

Subtask D: Develop IT-Toolkit “EnERGo”

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IT Tool-kit “EnERGo“ based on the Energy Concept Adviser (ECA) - an electronic interactive source book – will include all Annex results and will allow users to obtain extensive information, according to their individual focus of interest:

- **energy saving opportunities,**
- **design inspirations,**
- **design advice,**
- **decision tools,**
- **design tools,**
- **commissioning methods,**
- **long term monitoring systems and measures that require no financial investment.**

Annex 46 Deliverables

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- **Energy Assessment Guide for Energy Managers and ESCOs**
- **Energy Saving Technologies and Measures for Building Retrofits database with examples of best practices**
- **Best-practice guidelines for innovative energy performance contracts**
- **IT-Toolkit “EnERGo”**

Participants

Country	Organization	Contribution
Canada	Public Works	Subtasks A,B,D(?)
Denmark	Cenergia	Subtasks A,B,C,D
	International Center for Indoor Environment and Energy	Subtask B
Finland	Technical Research Centre of Finland/VTT	Subtasks A, B,C,D
Germany	Fraunhofer Institute of Building Physics	Subtask B,C,D
	TBD	Subtask A
United Kingdom	University of Strathclyde / Energy Systems Research Unit (ESRU)	Subtask B
United States of America	USACE ERDC*	Subtask A,B,C,D
	HQ USACE	Subtasks A,B,D
	NAVFAC	Subtasks A, B
	Oak Ridge National Laboratory	Subtasks C,D
	Oklahoma State University	Subtask B
Poland	FEWE	Subtasks A, B(Observer)
Russia	ABOK	Subtask B, D (Observer)
	CRIIB	Subtasks A, B,D (Observer)

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USACE ERDC (USA) - Operating Agent
Finland – Subtask A leader
Denmark – Subtask B leader
ORNL (USA) – Subtask C leader
Fraunhofer Institute (Germany) – Subtask D leader

First Annex 46 planning workshop "Energy Efficiency in Government Buildings" Orlando (USA) February 4-6, 2005

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- **Shared information and ideas in a collegial forum**
- **Provided technical and methodological support to energy managers, designers, and Energy Saving Companies**
- **Provided a forum to prepare the detailed Program of Work, select subtasks leaders and distribute tasks for the IEA ECBCS Annex 46 "Holistic Assessment Tool-kit on Energy Efficient Retrofit Measures for Government Buildings (EnERGo*)***